

REMARKS

Claims 6-11, 13, 19-23, and 25 remain pending in the present application and stand rejected. As indicated in the attached petition under 37 C.F.R. §1.181, Applicants submit that the status of "Final" in the Outstanding Office Action is premature, and respectfully request that the status be changed to "Non-Final." Applicants also respectfully request reconsideration under MPEP §706.07(d). As such, the Examiner is respectfully requested to reconsider and withdraw the rejections in view of the remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 6-8, 11, 19-23, and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lin et al. (2001/0014373) in view of Braeutigam et al. (EP745919) and Takahashi (JP04206602). These claim rejections are respectfully traversed.

The Outstanding Office Action states that Lin discloses an "...inherently adjustable temperature coefficient of resistance (TCR) because it is made from Ag/Pd ..." along with Takahashi, thus arriving at an erroneous conclusion that the resistive layer is a heater element and a temperature sensor.

First of all, Applicants are unclear as to the use of the term "adjustable" in the Outstanding Office Action. Assuming arguendo that the term "sufficient" was intended, Applicants respectfully disagree with the outstanding claim rejections. The standard for a 103 rejection "... is what the combined teachings, knowledge of one of ordinary skill in the art, and **the nature of the problem to be solved** as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 55 USPQ2d 1313 (Fed. Cir. 2000). [Emphasis added]. The nature of the problem to be solved in Lin et al. is that of using

thick film on Aluminum. In stark contrast, the nature of the problem to be solved in the present application is to reduce the bulk and complexity of heater systems, and more specifically, layered heater systems. (See, e.g., paragraphs [0004] and [0005] of the written description). Moreover, Lin et al. is entirely void of any temperature sensors or sensing capability throughout its disclosure. Without any teaching or suggestion to provide temperature sensing capability, one skilled in the art would not be motivated to modify Lin et al. with a temperature controller. Accordingly, Applicants submit that the rejections based on Lin et al. lack support or explanation without this required motivation.

As far as Braeutigam, (a courtesy copy of the English translation is enclosed for the Examiner's convenience), this application merely discloses a circuit that switches on and off (power switching device 7) to maintain a heating element at a constant temperature. There is no disclosure of a two-wire controller as that term has been defined in the present application. For example, there is no disclosure whatsoever of any compensation for drift or calibration by the disclosed circuit. The circuit of Braeutigam merely aims to provide a constant temperature heater and solve the problem of "linearity, temperature sensitivity, equalizing etc." (Page 2, Paragraph 1). Similar to the other cited references, there is no motivation provided by Braeutigam to reduce the bulk and complexity of heater systems, let alone layered heater systems.

In re Kotzab also reiterates that "...identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making

the specific combination that was made by the applicant.” *Id* at 1316. No such motivation, suggestion or teaching has been identified for the specific combination contained within the outstanding claims. All of the Outstanding Office Actions to date have merely identified individual parts in a plethora of cited prior art, not any motivation for the specific claimed combination in the outstanding claims. This alone, according to the Federal Circuit, is not enough to support a 103 rejection.

Also in *Kotzab*, the Court found that the Examiner and the Board fell into “the hindsight trap.” Even though the claimed invention was “... a technologically simple concept,” there was no motivation “...to make the combination in the manner claimed.” *Id* at 1318. Similarly, no such motivation to make the combination in the outstanding claims has been provided in any of the Office Actions to date.

None of the cited references, either in the Outstanding Office Action or in any of the previous Office Actions, address the problem to be solved by the claimed invention, namely, reducing the bulk and complexity of layered heater systems. By only identifying individual parts of the claimed invention and not identifying a similar problem to be solved in the cited prior art, Applicants submit that the outstanding rejections lack support.

Furthermore, Applicants submit that none of Lin et al, Braeutigam et al, or Takahashi teach or suggest a layered heater including a resistive layer having sufficient temperature coefficient of resistance characteristics such that the resistive layer is a heater element and a temperature sensor. Moreover, these references do not teach or suggest only two electrical lead wires connected to the resistive layer, and a two-wire controller. Motivation for this specific claimed combination is not provided by any of the

cited references and thus Applicants respectfully request that the outstanding claim rejections be withdrawn.

The Outstanding Office Action also states that 9-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lin in view of Braeutigam and further in view of Lumsden. Claims 9 and 10 depend from Claim 6 and distinguish over these references for at least the reasons stated above in connection with Claim 6. Therefore, Applicants respectfully request that these claim rejections be withdrawn.

The Outstanding Office Action further states that Claim 13 is rejected under 35 U.S.C. §103(a) as being unpatentable over Lin in view of Braeutigam and further in view of Waggoner et al. Claim 13 depends from Claim 6 and distinguishes over these references for at least the reasons stated above in connection with Claim 6. Therefore, Applicants respectfully request that this claim rejection be withdrawn.

CONCLUSION

It is believed that all of the stated grounds of objection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding objections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (314) 726-7524.

Respectfully submitted,

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Title: Method for temperature regulation of a heating element

Summary

There is a variety of electrically and electronically regulated heating elements, which are maintained at a constant temperature by means of temperature sensors (thermoelements, NTC-PTC-sensors etc.), according to pre-selected temperature setting.

In case of the present patent application sensor or measuring resistor is completely renounced. The heating elements itself turns into a sensor.

By means of rectification (1) the alternating voltage turns into a pulsating direct voltage, which is smoothed and stabilised in the voltage stabilisation (2).

The pulse generator (3) ensures a time partition of measuring phase and heating phase. In the measuring phase the heating is interrupted and the resistance of the heating element (8) is compared with the target value presetting (4) in the comparator (5). Depending on whether the resistance of the heating element is above or below the target value, the control (6) for the alternating voltage switch (7) is informed, whether it has to be heated or not, in order to obtain the target value.

Figure 1

- 1 = voltage stabilisation
- 2 = comparator
- 3 = control for 5
- 4 = target value presetting
- 5 = alternating voltage switch
- 6 = heating element

Figure 2

- 1 = rectification
- 2 = voltage stabilisation
- 3 = pulse generator
- 4 = target value presetting
- 5 = comparator
- 6 = control for 7
- 7 = alternating voltage switch
- 8 = heating element